

MISCELLANEOUS TYPIFICATIONS, ONE NEW SERIES, AND ONE NEW VARIETAL COMBINATION IN CRATAEGUS (ROSACEAE)

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ABSTRACT

Fifteen specific epithets and one varietal epithet in *Crataegus* (Rosaceae) are typified. These are: *C. brainerdii* Sarg., *C. subrotundifolia* Sarg., *C. brumalis* Ashe, *C. gravis* Ashe, *C. populnea* Ashe, *C. acutiloba* Sarg., *C. demissa* Sarg., *C. macrosperma*, *C. matura* Sarg., *C. pastorum* Sarg., *C. pentandra* Sarg., *C. roanensis* Ashe, *C. laurentiana* Sarg., *C. fernaldii* Sarg., *C. brunetiana* Sarg., and *C. laurentiana* var. *dissimilifolia* (the last four putative interserial hybrids). A new combination, ***Crataegus chrysocarpa*** Ashe var. ***subrotundifolia*** and a new series of central Asian *Crataegus*, **Altaicae**, are also proposed.

KEY WORDS: *Crataegus* (Rosaceae), typifications, *Crataegus chrysocarpa* Ashe var. *subrotundifolia* (Sarg.) J.B. Phipps, comb. et stat. nov., North American, *Crataegus* ser. *Altaicae* J.B. Phipps, ser. nov.

RESUMEN

Se tipifican quince epítetos específicos y uno varietal en *Crataegus* (Rosaceae). Estos son: *C. brainerdii* Sarg., *C. subrotundifolia* Sarg., *C. brumalis* Ashe, *C. gravis* Ashe, *C. populnea* Ashe, *C. acutiloba* Sarg., *C. demissa* Sarg., *C. macrosperma*, *C. matura* Sarg., *C. pastorum* Sarg., *C. pentandra* Sarg., *C. roanensis* Ashe, *C. laurentiana* Sarg., *C. fernaldii* Sarg., *C. brunetiana* Sarg., y *C. laurentiana* var. *dissimilifolia* (híbridos putativos interseriales). Se proponen también una nueva combinación, ***Crataegus chrysocarpa*** Ashe var. ***subrotundifolia*** y una nueva serie de *Crataegus*, **Altaicae**, de Asia central.

INTRODUCTION

Until recently, most of the names used in the forthcoming treatment of North American *Crataegus* for Flora of North America, vol. 9, were not or not precisely, typified. This is gradually being rectified by the author, in part with various colleagues, by the typification of hundreds of names, for the most part those that will appear in the flora. Several important names from classical authors of the late eighteenth up to the later nineteenth century have now been typified, including e.g., *C. viridis* L., *C. crus-galli* L., *C. coccinea* L., *C. intricata* Lange, *C. flava* Aiton, *C. pruinosa* (H.L. Wendl.) K. Koch, and *C. rivularis* Nutt. However, by far the majority of names recently typified come from the ‘explosion period’ of *Crataegus* taxonomy, a time when the type concept was beginning to take hold, so only a few of these names prove to have holotypes. Of the major authors of this period, C.D. Beadle either cited cotypes (usually matching flowering and fruiting specimens from the same tree) in the protologue or designated them on the sheets and his taxa are generally straightforward to lectotypify. Beadle’s types are mainly at US and NY. Charles S. Sargent normally indicated syntypes, either explicitly in his protologues or by annotating relevant specimens as “type” or simply ‘n. sp.’. There is virtually always adequate surviving material for lectotypification at A or GH, and sometimes duplicates elsewhere, the difficulties instead lying in selecting an appropriate lectotype from the putative types when slight discrepancies from the protologues are found, or if, sometimes, there are mixed gatherings. Further, there may be complications as a consequence of the tree numbering system in which various collaborators used the same number for a particular tree even when collecting at different dates. Sargent’s names also present a challenge by their sheer number (832) but several hundred have now been typified. W.W. Ashe is the major author of this period whose names present the most difficult problems as his indications in the protologue of type, collector and location, are often poor, ambiguous, or even lacking

so that only the existence of handwriting by Ashe or one of his collectors remains to document authenticity. The dispersal of authentic Ashe material during his active period was to a wide range of herbaria so it can be difficult to track down, while his private collection, often poorly labeled and seemingly incomplete, had to await curation at NCU until after his death by T.G. Harbison, this a labor of love never completed. Added to all this, his protologues tend to have the least detail of these three authors, sometimes omitting characters considered essential today. This is unfortunate for Ashe created many potentially earliest names and certainly many important species names bear his authorship, e.g., *C. chrysocarpa*, *C. dodgei* and *C. margaretta* (since typified), *C. macrosperma*, *C. roanensis*, *C. holmesiana* (still untypified). Consequently, Ashe names usually require neotypification, and not surprisingly, there is little enthusiasm for entering this minefield.

This paper concentrates on several Sargent and Ashe examples to provide valid names for clearing up some taxonomic problems in ser. *Tenuifoliae*, *Brainerdianae* and *Rotundifoliae* and some putative interserial hybrids probably between ser. *Rotundifoliae* and *Macracanthae*. The text is also the vehicle for introducing the segregate central Asian series *Altaicae*.

A—*Crataegus* series *Brainerdianae*

1. *Crataegus brainerdii* Sarg., *Rhodora* 3:27.1901. TYPE: U.S.A. VERMONT. Addison Co.: SW Middlebury, "Garrett House," 22

Sep 1900, *E. Brainerd 6b* (LECTOTYPE, designated here: A 2536, duplicate at A).

Comment.—This sheet, like the other two syntypes, has both flowering and fruiting material. The lectotype shows beautifully the characteristic leaf shape and the quite abundant, ± ellipsoid fruit.

B—*Crataegus* series *Rotundifoliae*

1. *Crataegus chrysocarpa* Ashe var. *subrotundifolia* (Sarg.) J.B. Phipps, comb. et stat. NOV. BASIONYM: *Crataegus*

subrotundifolia Sarg., *Bot. Gaz.* 35:394. 1903. TYPE: U.S.A. ILLINOIS. Lake Co.: shores of Lake Zurich on bluff bank, 13 May 1901, E.J. Hill 31a (LECTOTYPE, designated here: A).

Comment.—A fruiting syntype, same label data except 5 Sep 1901, shows better the quite rounded short-shoot leaves on which Sargent based this species. However, as I am emphasizing the glabrous hypanthium and the not densely hairy inflorescence branches to particularize this, consequently widespread form, I prefer the flowering specimen for the type.

This variety is erected to accommodate those variants of *Crataegus chrysocarpa* with glabrous hypanthia and variably hairy inflorescences.

C—*Crataegus* series *Silvicolae*

1. *Crataegus brumalis* Ashe, *Ann. Carnegie Mus.* 1:393.1902. TYPE: U.S.A. PENNSYLVANIA. Allegheny Co.: Pittsburgh, 18th

Ward, Stanton Ave., corner of Morningside Road, *J.A. Shafer 19a*, 20 May 1902 (LECTOTYPE, designated here: PH 648488).

Comment.—A quite good duplicate (PH 686552) exists as does some fruiting material with the lectotype. The stamens on the lectotype are said to be purple.

This taxon, often made a variety of *C. iracunda* Beadle, has ± glabrous adaxial leaf surfaces at anthesis and much broader truncate leaf-bases. Moreover, it is out of range for *C. iracunda* so it is best assigned to ser. *Silvicolae* as a scarce presumptive interserial hybrid. Most records of it are probable misidentifications of a form of *C. macrosperma*.

2. *Crataegus gravis* Ashe, *J. Elisha Mitchell Sci. Soc.* 20:49. 1904. TYPE: U.S.A. MICHIGAN. St. Clair Co.: Port Huron, C.K.

Dodge Type Tree 28, 26 May 1902 (LECTOTYPE, designated here: MICH). EPITYPE: U.S.A. Michigan: St. Clair Co.: Port Huron, C.K. *Dodge Type Tree 28*, 7 Oct 1902 (LECTOTYPE, designated here: MICH, duplicate at MICH).

Comment.—This tree was apparently quite frequently collected and Kruschke (1965) mentions specimens at MSC and MIN. Unfortunately, this flowering syntype, the only one located, is of indifferent quality, so I am also epitypifying with a superior fruiting specimen from the type tree.

This species was said to be 'common' by Ashe but it has not been seen in the vicinity of Port Huron, including the very well-collected Sarnia area across the river in Ontario, in recent years. It is somewhat like *Crataegus pruinosa* var. *parvula* in general appearance but has slightly hairy adaxial leaf surfaces, a proportionately broader and slightly larger leaf, a larger and narrower fruit type, and lacks the elevated calyx of *C. pruinosa*.

3. *Crataegus populnea* Ashe, Ann. Carnegie Mus. 1:395.1902. Type: U.S.A. PENNSYLVANIA. Berks Co.: 2.5 mi NW of Kutztown, beyond Umbrella Hill, C.A. Gruber 31, 15 May 1902 (LECTOTYPE, designated here: PH).

Comment.—Two excellent fruiting specimens at PH dated 20 Sep 1903, have otherwise identical label data.

The type material confirms exactly the traditional interpretation of this fairly common northeastern species, which is followed in FNA vol. 9. The large leaves, especially at anthesis, and squarish lobe-tips of many of the leaves are characteristic.

D—*Crataegus* series *Tenuifoliae*

Forms of *C. macrosperma* that have been made into varieties have been selected for typification.

1. *Crataegus acutiloba* Sarg., Rhodora 3:23. 1901. Type: U.S.A. MAINE. Hancock Co.: Mt Desert, 4 Sep 1899, B. Jones s.n. (LECTOTYPE, designated here: A).

Comment.—A beautiful fruiting specimen, annotated by Sargent 'n. sp.' is selected for the lectotype. It has the characteristic large, cuneate-based, somewhat elongate (5–8 mm) leaves and narrow fruit that perfectly fits the protologue. Sargent considered this the characteristic large-leaved type of the coast from Massachusetts Bay to Nova Scotia but cited neither specimens nor any precise localities.

An A specimen annotated 'type' by Kruschke is not supported in Kruschke (1965).

2. *Crataegus demissa* Sarg., Rhodora 5:139. 1903. Type: U.S.A. VERMONT. Chippenden Co.: Charlotte, 26 May 1902, F.H. Horsford s.n. (LECTOTYPE, designated here: A).

Comment.—The lectotype is described as a 'small shrub' and has all the short-shoot leaves truncate to ± cordate, exactly fitting the protologue. A fruiting syntype collected by Sargent from Charlotte, Vt., is a good match. However, all the syntypes from Lennox, Mass., have mostly wide-cuneate leaf-bases, with only a few ± truncate.

This is a very distinctive, apparently dwarf, form of *C. macrosperma* but there appears to be little material from anywhere else closely matching the type.

3. *Crataegus macrosperma* Ashe, J. Elisha Mitchell Sci. Soc. 16:73. 1900. Type: U.S.A. ALABAMA. DeKalb Co.: Desoto State Park, woodland, 25 Sep 2001, R. Lance 2170 (NEOTYPE, designated here: UWO).

Comment.—The neotype comes from the southern part of Lookout Mountain, the type locality. It is selected for its suborbicular fruit and leaves matching the protologue, except for their apices (see below).

Crataegus macrosperma is the most important taxon dealt with in this paper. Ashe gives the distribution as northern Alabama, northwestern Georgia and the adjacent portions of Tennessee, being frequent on Lookout Mountain in the last state (type locality) and in the surrounding mountains. Lacking authentic material and working with an inadequate protologue, my interpretation is affected by attempting to create, if possible, an entity in the *Tenuifoliae* that satisfies the protologue sufficiently and also differs from *C. roanensis*, the other common regional member of this series, which Ashe held to be different. There is little meaningful differentiation in the protologues except for range, *C. macrosperma* having 'round' versus 'oblong' fruit, a more southwesterly, lower altitude distribution, leaf blades 'deltoid' (perhaps extension shoots, this not specified) or 'oval', a rather generic term of that period. *Crataegus macrosperma* is also said to have leaves 'obtuse' at the apex, but nothing like that has been seen in series *Tenuifoliae*, to which the protologue fully applies in other respects. Thus I am assuming that this is a defect in the description. There are two extreme leaf types in the general region of the type areas of *C. macrosperma* and *C. roanensis*, southwestern Appalachia, that broadly correlate with the different fruit types so I am typifying *C. macrosperma* on a specimen lacking cuneate leaf bases but having orbicular fruit. This, or a similar entity, appears to be a widespread form extending to the north of the range of the species though whether it merits varietal separation from *C. roanensis* requires further work. Certainly, apparent intermediates with *C. roanensis* occur.

4. *Crataegus matura* Sarg., Rhodora 3:24. 1901. Type: U.S.A. VERMONT. Addison Co.: N of Bristol village, 19 Sep 1900, E. Brainerd 10h (LECTOTYPE, designated here: A).

Comment.—A fine fruiting syntype specimen is selected for the lectotype. It has very large leaves to 9 cm long, broad ovoid fruit and a broader angle at the leaf-base than *C. acutiloba*.

Crataegus matura and *C. acutiloba* appear to represent poles of variation of large-leaved northeastern *C. macrosperma*. An A specimen annotated 'type' by Kruschke is not supported in publication.

5. *Crataegus pastorum* Sarg., *Rhodora* 3:24. 1901. TYPE: U.S.A. MASSACHUSETTS. Worcester Co.: West Boylston, 6 Oct 1900, J.G. Jack 11 (LECTOTYPE, designated here: A).

Comment.—I agree with Kruschke that *C. pastorum* is simply an ordinary form of *C. macrosperma*. Sargent gave the area of occurrence from the Champlain valley (Vermont) and Berkshire Co. (Mass.), to central and southern Massachusetts but cited no specimens nor any precise localities. There are, however, plenty of specimens labeled 'n. sp.' by Sargent from the stated area.

6. *Crataegus pentandra* Sarg., *Rhodora* 3:25. 1901. TYPE: U.S.A. VERMONT. Rutland Co.: West Rutland, 17 Sep 1899, W.W. Eggleston 1135 (LECTOTYPE, designated here: A).

Comment.—A fruiting syntype specimen is selected for the lectotype. It has quite large leaves to 6 cm long, large subglobose fruit and is somewhat similar to *C. matura* and *C. acutiloba*.

7. *Crataegus roanensis* Ashe, *Bull. North Carolina Exp. Sta.* 175:114.1900. TYPE: U.S.A. NORTH CAROLINA. Henderson Co.: Bearwallow Mountain, Sep 1904, R.Lance 205 (NEOTYPE, designated here: NCU).

Palmer in 1946 made this a variety of *Crataegus macrosperma* eventually differentiating it by the depth of lobing of the leaves while Kruschke raised it to the rank of species. This attention was given even though the species had no formal type. Ashe gives the distribution as Yancey and Mitchell counties, North Carolina, especially about the base of Roan Mountain (on the Tennessee border of Mitchell Co.), saying that it is not common below 4000 ft but between 4000 and 6000 ft it is one of the most common thorns. Although, presumably, Ashe held this to be different from *C. macrosperma*, there is little differentiation in the protologues, this taxon having 'oblong' versus 'round' fruit. I find two extreme leaf types in the general region of the type areas for *C. roanensis* and *C. macrosperma* that broadly correlate with the different fruit types so I am typifying *C. roanensis* on a specimen with cuneate leaf bases and oblong fruit. Forms of the *macrosperma* complex with narrow fruit are widespread, extending to Wisconsin, Ontario and New England and warrant further study. Interestingly, the quite numerous specimens from Yancey and Mitchell counties at NCU better match *C. macrosperma* than *C. roanensis* as interpreted here.

E—Putative interserial hybrids

Taxonomic discussion of the following may be found in *Flora of North America*, vol. 9, which it is anticipated will be published later this year.

1. *Crataegus laurentiana* Sarg., *Rhodora* 3:77. 1901. TYPE: CANADA. QUEBEC. La Prairie Co.: La Tortue (outskirts of Delson), 8 Oct 1899, J.G. Jack 40 (LECTOTYPE, designated here: A).

Comment.—The type has eroded nutlets and in Jack 40 (flowering) the petioles are virtually eglandular. The latter is a particularly fine specimen from the type locality. Flowering syntypes have pink anthers. Further syntypes, also Jack collections, come from La Tortue and Caughnawaga (same county).

2. *Crataegus laurentiana* Sarg. var. ***dissimilifolia*** Kruschke ex J.B. Phipps. TYPE: U.S.A. WISCONSIN. Ashland Co.: Madeline Island, 1.5 mi S of La Pointe, 11 Sep 1950, E.P. Kruschke K-49-145 (LECTOTYPE, designated here: MILW, duplicate of lectotype: A).

Comment.—The flowering co-type, same label data except 3 Jun 1949, would make an excellent epitype. Anthers of the latter are 'white'.

Crataegus laurentiana Sarg. var. *dissimilifolia* Kruschke, *Milwaukee Public Mus. Publ. Bot.* 3:35. 1965

Although Kruschke's protologue has the word type associated with the second, fruiting specimen of a matching pair, it is clear both from the consistency of his usage as well as from the labeling of the specimens, that he understands the pair as co-types, the first being the flowering specimen of the same collection number. Kruschke's only exception to this system is found in a few cases where he only collected a type at one season.

3. *Crataegus fernaldii* Sarg., *Rhodora* 5:166. 1903. TYPE: U.S.A. MAINE. Aroostock Co.: U.S.A.: Maine: Aroostock Co.: Fort Fairfield, river thicket, 27 Sep 1901, M.L. Fernald Cr. 21 (LECTOTYPE, designated here: A).

The sharp and deep lobing of the leaves and relatively broad breadth: length ratio is reminiscent of *C. chryso-*

carpa but the near-glabrous and near-glandular petioles are more like *C. macracantha*. Pink anthers in a syntype of the same number (presumed type tree) could well originate from *C. macracantha* but would be very unusual in *C. chrysocarpa* while the somewhat eroded nutlets of the lectotype suggest intermediacy between the species discussed. In sum, this seems to be a broader-leaved, somewhat less villous *C. laurentiana*.

4. *Crataegus brunetiana* Sarg., *Rhodora* 5:164. 1903. TYPE: CANADA. QUEBEC. Quebec Co.: Montmorency Falls, 30 May 1901, J.G. Jack 129 (LECTOTYPE, designated here: A).

This is rather similar to *C. laurentiana* but the leaves are proportionately wider, even more sharply lobed in flower and less hairy (rather as in *C. fernaldii*), the petioles at anthesis more glandular, the inflorescence branches of a less silky villosity and the anthers cream. The flowering syntype, Jack 129, has pitted nutlets like *C. laurentiana* while those of another syntype, Jack 120, do not.

F—*Crataegus* series *Altaicae*

Crataegus* series *Altaicae J.B. Phipps, ser. nov. TYPE: *Crataegus altaica* Lange (*Crataegus wattiana* Hemsley & Lace).

Similes ad ser. *Sanguineae*, ser. emend., sed cum fructibus luteis vel fuscis, non rubris vel atris, inflorescentiis glabris, non pilosis vel subpilosis. Distributio: Asia centralis occidentalis in montanibus. Species 1 vel 2(-3).

Series *Altaicae* is a small (1–2 or 3) species series widespread in Central Asia to the west of the central Asian massif which ranges from Baluchistan (Pakistan) to the northern slopes of the Altai in south-central Siberia. It is named for a species widely known as *C. altaica* Lange, perhaps synonymous with *C. wattiana*. The new series is segregated from ser. *Sanguineae*, with which it shares important characters of pitted nutlets and falcate basal bracteoles. However, it has glabrous inflorescences, a very unusual yellowish to tan fruit color and occurs, uniquely for sect. *Sanguineae*, in a semi-xeric upland climatic zone. Differently from sect. *Sanguineae* as here emended, ser. *Altaicae* may also have an unusual but here not uncommon form in the species complex *C. wattiana/altaica* which has very deeply lobed leaves and veins to the sinuses.

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